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REPORT C4

AN ACCOUNT OF THE RESPONSE TO THE ONTARIO
GOVERNMENT'S COMMUTER RAIL SERVICE AND ITS
IMPACT, FROM INAUGURATION ON MAY 23, 1967
UNTIL DECEMBER 31, 1968

REPORT PREPARED BY THE DEPARTMENT OF HIGHWAYS
OF ONTARIO, JUNE, 1969



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Government of Ontario Transit

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CONTENTS

	Page
1. PREFACE	1
2. CHARACTERISTICS OF GO RIDERS	2
2.1 Introduction	2
2.2 Purpose & frequency of trip & sex of rider	3
2.3 Socio-economic characteristics	7
3. RIDING TRENDS	8
3.1 Introduction	8
3.2 Riding on weekdays	9
3.3 Riding on weekends	14
3.4 Origins & destinations	16
3.5 Special events	18
3.6 Children on GO Transit	21
4. IMPACT	22
4.1 Introduction	22
4.2 Choice of mode	22
4.3 Impact of GO Transit on other modes of transportation	25
4.3.1 Impact on roads	26
4.3.2 Impact on other public transportation	28
4.4 Impact on people & their community	30
4.4.1 GO creates its own submarket	30
4.4.2 Residential development	31
5. RESTRAINTS & ATTRACTIONS	34
5.1 Internal factors	34
5.1.1 Car lots	34
5.1.2 Shortage of seats	36
5.1.3 Train performance	36

CONTENTS

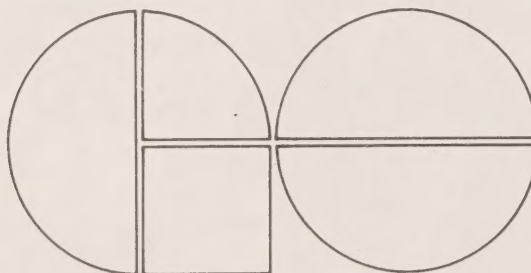
	Page
5.2 External factors	37
5.2.1 The weather	38
5.2.2 T.T.C. subway extensions	40
6. FINANCIAL RESULTS	43
7. THE FUTURE	45
7.1 Expansion of lakeshore service	45
7.2 Expansion along other lines	46
7.3 Planning for the future	47

1

Preface

This report takes an overall look at the operation and impact of GO Transit since its inauguration. Its main purpose is to assemble much of the detailed data which has already been published in separate reports, and to present this in a concise and coherent format. In this respect, it differs from previous C-series reports, the purpose of which was primarily to document the riding trends that had emerged over short periods of time.

This report makes no attempt to describe the physical characteristics of the GO Transit system. Readers who are unfamiliar with the system are advised to read the companion report "GO Transit - A New Approach to Urban Transportation".



2 Characteristics of riders

2.1 Introduction

The actual riding patterns that have been observed since the start of the GO Transit service are recorded in part 3. It will be noticed that riding during weekday peak periods has followed a significantly different trend to that established by off-peak riders.* Distinct and dissimilar riding patterns have also emerged for Saturdays and Sundays.

In order to understand the reasons for these variations, it is necessary to know a little about the kinds of people who ride GO Transit, and how their characteristics tend to vary according to the time and day when they take their trip. This section looks at these people and presents some of the findings of various surveys that have been conducted among GO Transit riders.



* Peak trains are defined as being those trains which operate towards Toronto between 6:00 and 9:00 a.m., and away from Toronto between 4:00 and 7:00 p.m. All other trains are considered to operate during the off-peak.

2.2 Purpose & frequency of trip & sex of rider

Figure 1 shows how the total number of people taking trips during weekday peak and off-peak periods, and Saturdays and Sundays are classified according to the purpose for which their trip is made. These proportions will vary to some extent according to the season of the year; for instance, shopping becomes much more significant on Saturdays and during off-peak times before Christmas. The data used here relates to early November conditions for weekdays, and mid-June for weekends.

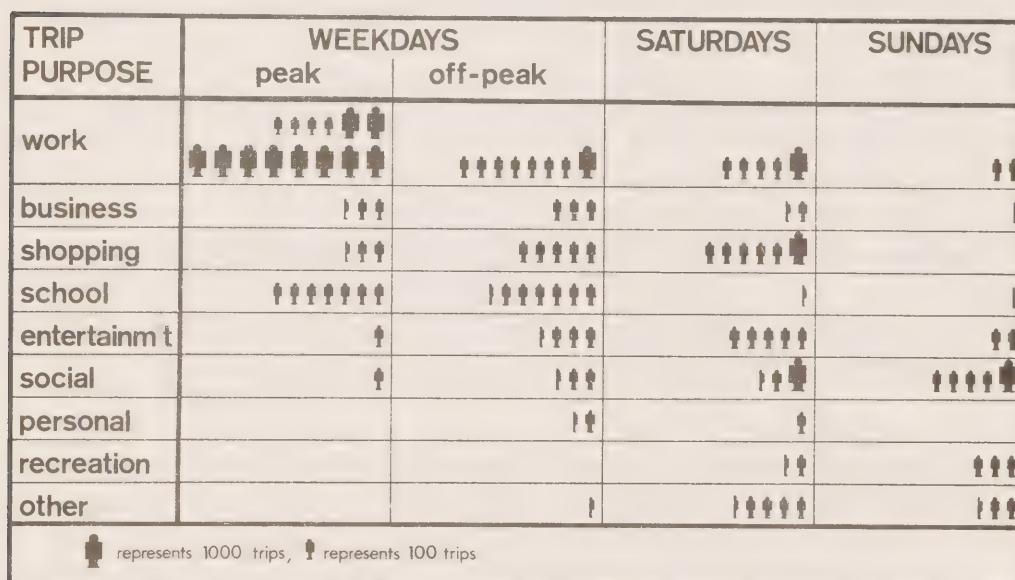


FIGURE 1 : Trip purpose of peak, off-peak, Saturday and Sunday riders.

The results are largely what one would expect. Work trips are very dominant during peak periods, accounting for over 85% of all trips. Work is also far the most important trip generator during off-peak periods (nearly 45% of all trips), although activities such as school, university, shopping and entertainment become significant. On Saturdays, shopping is the dominant activity, accounting for nearly 30% of trips, with work and social trips also being important. On Sundays social trips are predominant (55% of all trips).

For purposes of analysis, it is suggested that GO Transit riders can be divided into two broad categories according to the reasons for their trips. The first group comprises the "committed" trip-takers. These are people who are obligated to making a regular trip, either because of work, business, school or university.

The second group contains what may be called the "discretionary" trip takers. These are people whose trips are inspired by shopping, entertainment, social and recreational purposes. Such trips are usually generated at random intervals, and their timing is often flexible. For instance, a shopping trip does not usually need to be taken at a specific time or even on a specific day. Discretionary trips are taken less frequently than committed trips.

The table below shows how riders are split between committed and discretionary during weekdays and weekends.

	WEEKDAYS		SATURDAYS	SUNDAYS
	Peak	Off-peak		
Committed	95%	67%	30%	13%
Discretionary	5%	33%	70%	87%

This explains the high percentage of regular trips that occur during weekday peak periods (92%) and off-peak periods (70%) compared with Saturdays (36%) and Sundays (25%).

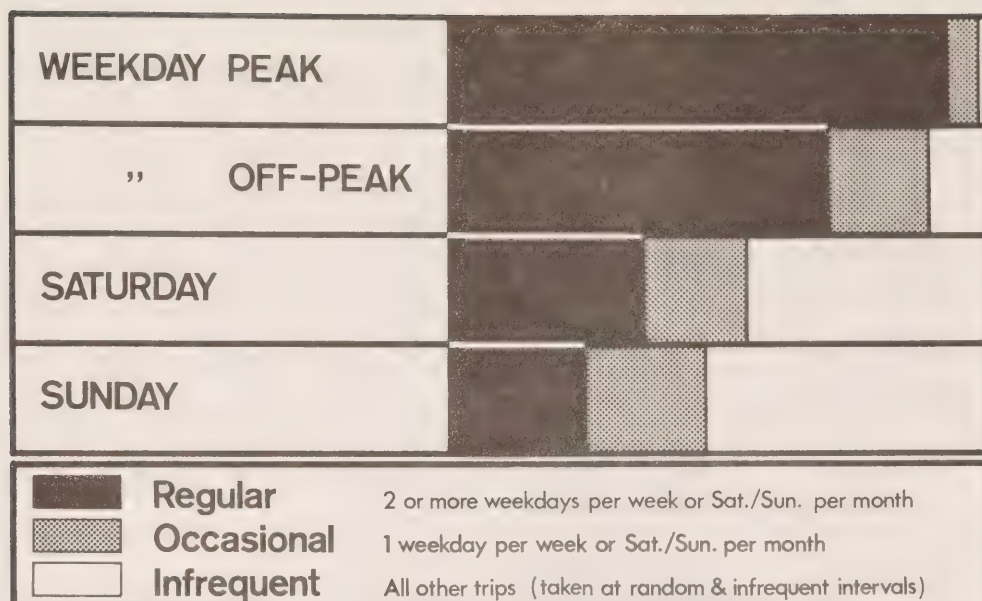


FIGURE 2 : Trip regularity of peak, off-peak, Saturday and Sunday riders.

Most of the peak riders are regular commuters and ride the trains every day, thus forming a stable "base" of GO Transit patrons. In contrast, the high percentage of discretionary and infrequent trips that occur on weekends represent a less stable market and the people riding the trains on any one Saturday or Sunday may be very different from those who rode during the previous weekend.

This hypothesis, although generalized, can be conveniently used to explain the riding patterns that have been observed. The actual riding trends that have emerged for peak, off-peak and weekend periods, tend to reflect the respective committed/discretionary mix of the people associated with them.

Figure 3 shows how the proportion of male and female riders varies by peak and off-peak periods, and weekends.

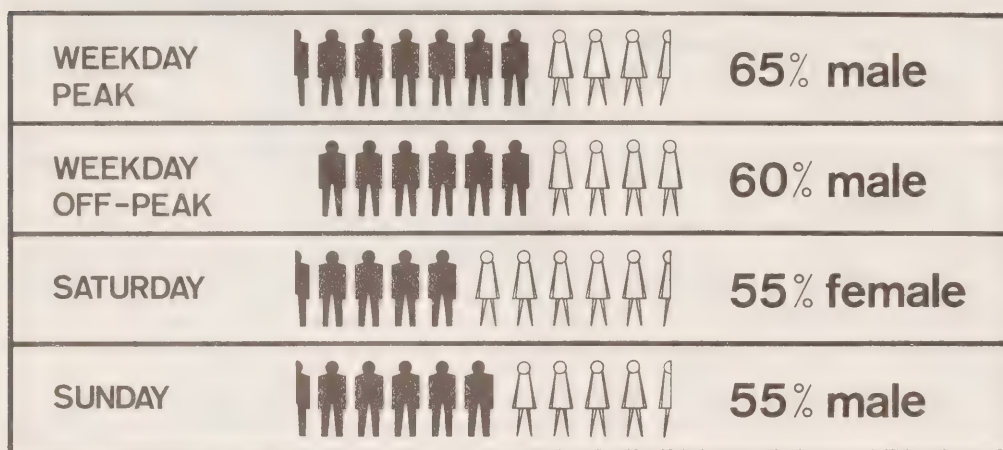
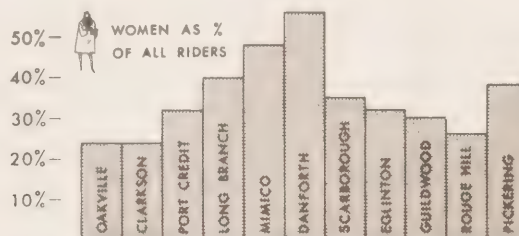


FIGURE 3 : Sex of peak, off-peak, Saturday and Sunday riders.

Females are only predominant on Saturdays, many of them being engaged on shopping trips. Males are particularly dominant during peak times and research has also shown that the proportion of males tends to increase as the length of trip increases. This is due partly to the generally lower incomes of women -- encouraging them to find local employment -- and also to the fact that some of the further communities (Oakville, Clarkson, Guildwood, Rouge Hill) are characterized by comparatively affluent households, with fewer wives employed outside the home.



2.3 Socio-economic characteristics

Surveys which have been conducted among representative households have allowed the characteristics of GO Transit riders to be compared with those of other people in the lakeshore corridor who take similar trips (by modes other than GO). With regard to occupation and sex, GO Transit users appear to be similar to those making similar trips by other modes. However, there is a definite indication that the incomes of GO Transit users tend to be higher than those of the total trip-taking members of the community.

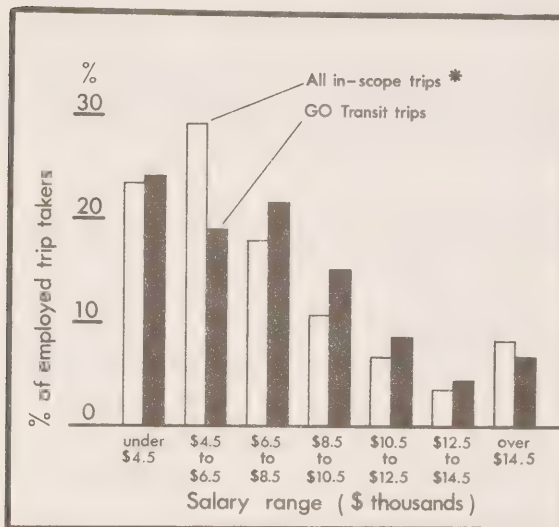


Figure 4 shows a higher percentage of GO users in the middle to high income range than is the case for the total trip-taking population. In the range above \$14,500, GO users are proportionally fewer than users of all modes, possibly due to the reluctance of high-income executives to take public transit.

FIGURE 4 : Incomes of GO Transit and other trip takers.

* In-scope trips are defined as those trips whose origins and destinations are such that they could be taken on GO Transit.

3 Riding trends

3.1 Introduction

This part is concerned with the actual number of trips that have been taken on GO Transit, as recorded by the tickets deposited by train riders.

For purposes of analysis, the week has been divided into four mutually exclusive periods: weekday peak, weekday off-peak, Saturday and Sunday. Part 2 has shown that the characteristics of the people who ride the trains during these four periods tend to be dissimilar. These dissimilarities are reflected in the significantly different riding trends which have emerged for the respective periods. Figure 5 allows these trends to be compared by reducing the riding figures to a common index.

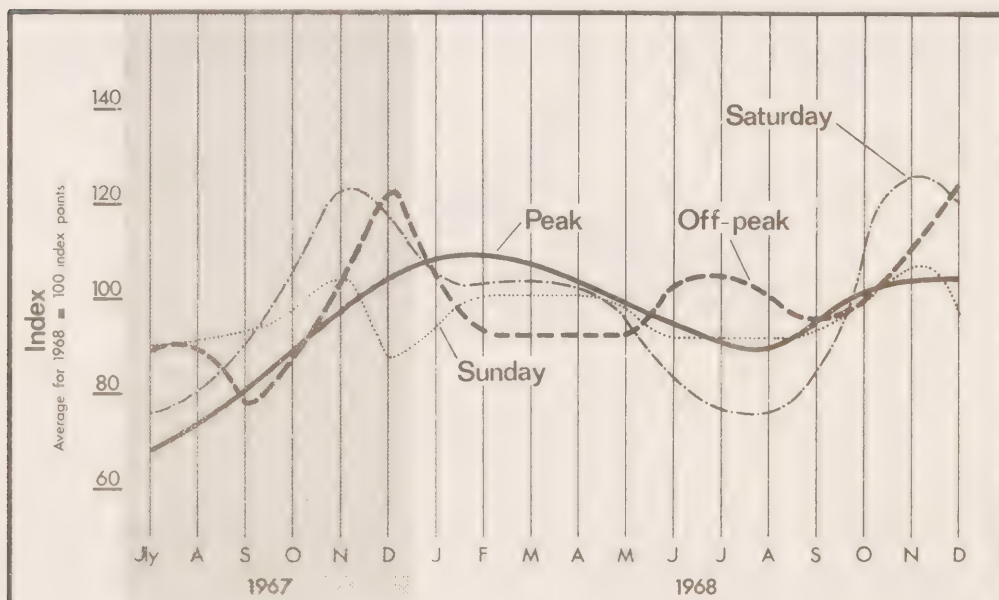


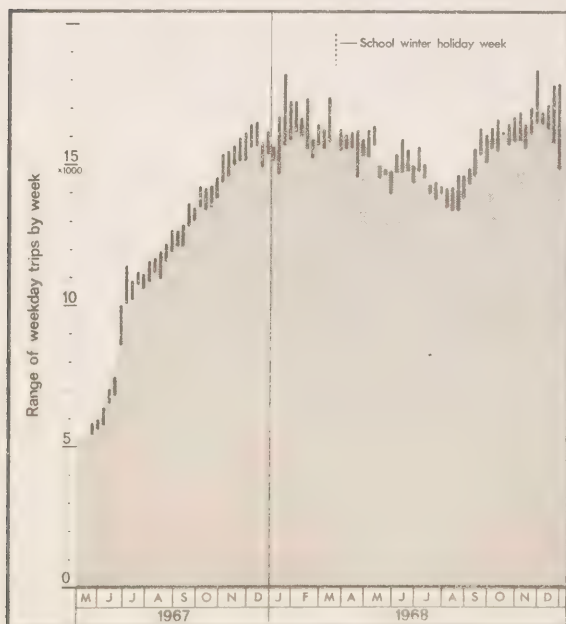
FIGURE 5 : Index of riding during peak and off-peak periods, Saturdays and Sundays.

These riding trends are discussed separately below. Riding on public holidays and during special events such as the Canadian National Exhibition has been kept apart from the routine weekday and weekend trends, and is discussed in section 3.5.

It should be noted at this stage that certain factors have tended to restrain the natural growth of GO Transit. The most significant of these factors was the opening of the T.T.C. Bloor-Danforth subway extension during May, 1968. The impact of this development was immediately reflected by a significant loss of GO Transit patrons at some of the inner suburban stations; a loss which has not been recovered. Other less quantifiable restraints have been imposed by shortage of seating on peak trains, and lack of parking spaces in certain station lots. These restraints are discussed in part 5.

3.2 Riding on weekdays

Nearly 85% of all GO Transit trips are taken during weekdays. Figure 6 shows the range of weekday trips that were taken



during every week from the start of the service until the end of 1968. (For each week, the top of the black line represents the highest number of trips, and the bottom of the line denotes the lowest number of trips that were taken during that week). Trips to and from the Exhibition Park station for special events have been excluded.

FIGURE 6: Range of riding for each week since the start of GO Transit

The initial growth of GO Transit riding was very rapid, rising from around 5,500 per weekday at the start of the service in May to 12,000 at the beginning of September, 1967.

This high rate of growth was largely due to the improvements in service that were made during this period. For instance, when the number of trains running per day was sharply increased from 25 to 45 on June 26, weekday carryings increased nearly 50% in just two weeks. Another factor contributing to the high growth rate was the newness of the service, particularly to eastern corridor residents who had had virtually no commuter rail facilities before GO. It took time for potential rail-users to become aware of the service and to change established commuting patterns in order to make use of it. This continuing switch to rail by those people who decided to use it contributed to the high initial growth rate.

After full weekday service was introduced in early September, 1967, patronage continued to rise at a high rate, following almost a straight line trend until the middle of December. This continuing growth was boosted by a seasonal factor: commuter rail systems traditionally experience an uptrend from early fall to mid-winter.

After falling-off slightly between Christmas and New Years, weekday carryings experienced heavy fluctuations during January, February and March due primarily to the variation of weather conditions. It was observed that a heavy snow storm could boost GO Transit carryings by up to 15% on weekdays, whereas extreme cold, without snow, tended to deflate rail patronage (see section 5.2.1).

Weekday riding began to drop after March, a trend in keeping with traditional seasonal patterns. This natural fall-off was boosted by another deflationary factor: the opening of the T.T.C. subway extensions on May 11, 1968. These extensions to the Bloor-Danforth line put rapid transit within access of many people who had previously used GO Transit, and carryings accordingly dropped at the affected stations.

Riding continued to drop during the summer months, reaching a low around the beginning of August -- the peak vacation period. Thereafter, riding recommenced on the expected seasonal uptrend, falling-off slightly at the end of December.

In summary, weekday riding during 1968 averaged 15,600, and ranged from a high of 18,400 in November, to a low of 13,400 in August (excluding the school holiday week in March, when a high of 19,700 was experienced).

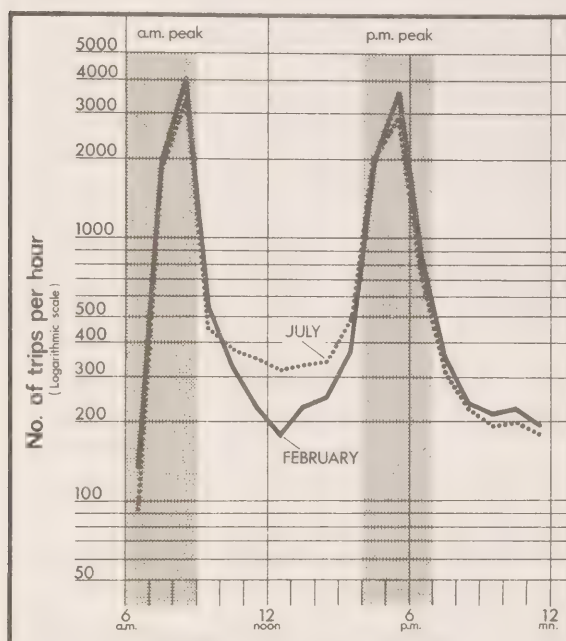


FIGURE 7

During the working day, GO Transit has experienced the usual pattern of high loading during the peak commuting periods. Between 70% and 75% of all weekday riders travel during the 6:00 to 9:00 a.m. and 4:00 to 7:00 p.m. periods. Over half of these (or 40% of all riders) are carried on the eight most crowded trains.

As we have seen from figure 5, both peak and off-peak riding tend to exhibit distinct and dissimilar seasonal patterns during the year.

Further indication of this is given in figure 7, which compares the daily pattern for February and July, 1968. In July, peak riding was less pronounced, while riding during the midday off-peak showed an increase over February.

Considering peak riding first, the winter months displayed the highest level of riding. This was thought to be caused by

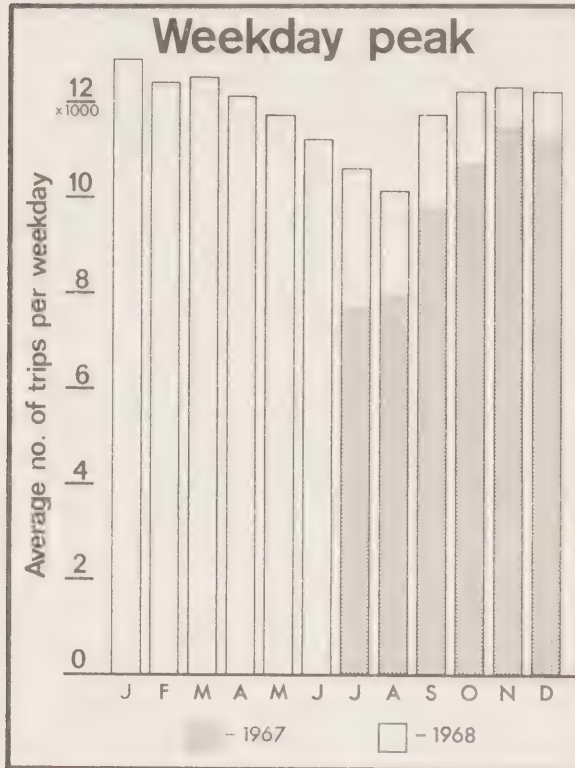


FIGURE 8 : Peak riding

regular commuters switching from automobile to rail on occasions when snow and ice made driving hazardous. This was especially noticed during January, 1968 when a severe snow and ice storm made driving almost impossible for two days, and unpleasant for another two.

After March, peak riding experienced a steady decrease, reaching a low in August. Certain seasonal factors tend to deflate peak riding during the summer months. Regular commuters take vacations, particularly in July and August, and students are out of school. In 1968, another factor

contributing to this fall-off in peak riding was the Bloor-Danforth subway extension, which was opened in the middle of May. Thus 1968 displayed a more extreme pattern than would normally be expected.

Peak riding increased significantly during September, reflecting the end of the vacation season, and the commencement of the academic year. Riding appeared to reach a stable level during October, which was maintained in November and December. In spite of the loss of riders to the subway, peak riding during November and December 1968 was around 8% higher than during the same months in 1967.

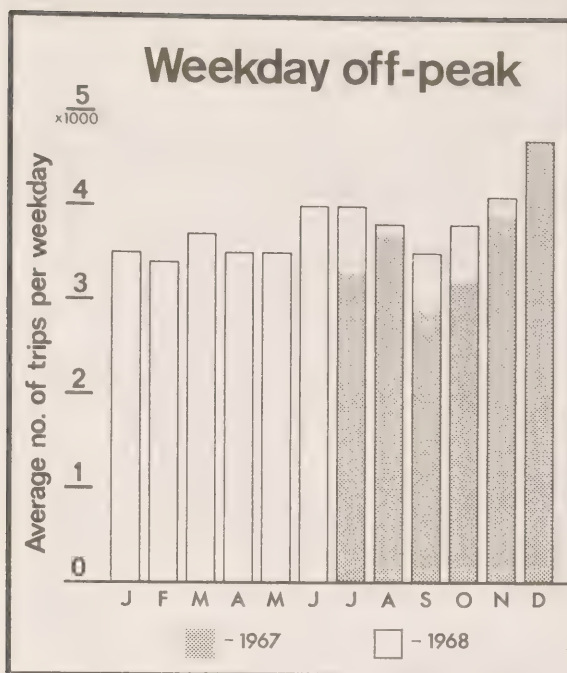


FIGURE 9 : Off-peak riding

As we have seen in part 2, there is a much higher proportion of discretionary trips associated with off-peak periods than there is during the work-trip dominated peak times. This type of trip tends to be discouraged by adverse conditions, and it is not surprising that off-peak riding is lowest during the cold winter months. Off-peak trips would have probably shown an increase during May, had it not been for the deflationary effect of the subway extension. In spite of this, riding increased significantly in June and July. This was

thought to be due to an increase in discretionary trips (such as social and recreational) with the warmer weather. Also school children were on vacation and able to use the GO service (see section 3.6).

During August, off-peak riding fell slightly, due possibly to the large number of families on vacation, and September saw a further decrease as the schools recommenced. However, as Christmas approached, off-peak riding was boosted by the large number of shopping and entertainment trips associated with this season. Off-peak trips in December were significantly higher than during any other month during the year.

The average number of off-peak trips during December 1968 was similar to that recorded for December 1967, suggesting that any growth which had taken place during the year had been countered by the loss of riders to the extended subway system.

3.3 Riding at weekends

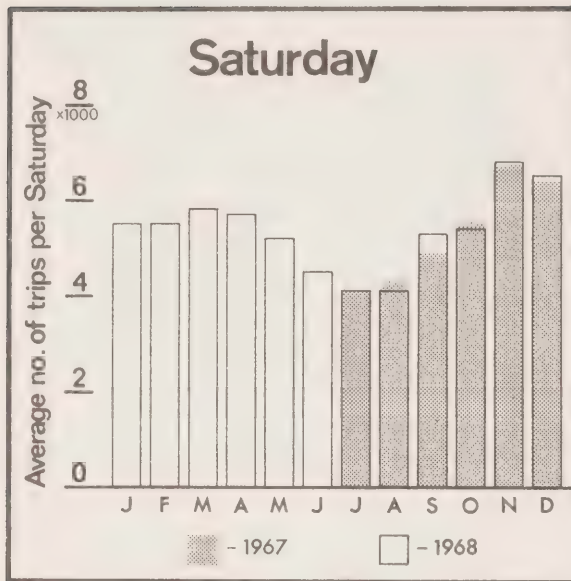


FIGURE 1 : Saturday riding

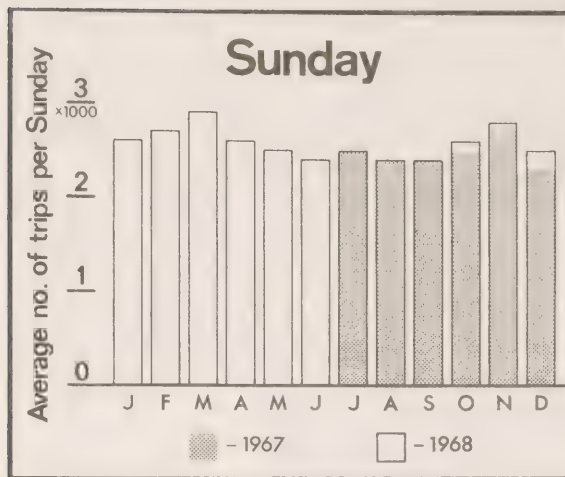
The pattern established through the year of trips taken on Saturdays (figure 10) resembles the weekday off-peak pattern except during the summer months when Saturday riding suffered a significant fall-off contrasting with the boost that was experienced by off-peak riding. This drop was probably caused by the large number of households who leave the Toronto area and head for the "cottage country" during summer weekends.

Saturday riding was also significantly affected by the subway extensions in May, 1968 and the subsequent loss of riders probably caused a more severe seasonal decline than would normally have been experienced.

During September and October, Saturday riding recovered to the level experienced during the winter months. Due to the large number of shopping and associated trips prior to Christmas, riding in November showed a substantial increase and established the highest monthly average for the year in both 1967, and 1968. (The November average excludes the Saturday of the Santa Claus Parade, which is described separately in section 3.5).

High carryings were maintained during the Saturdays before Christmas in December, but the average was reduced somewhat by a decrease in riding on the Saturday after Christmas.

Comparing the second half of 1968 with the same period in 1967, little natural growth appears to have occurred for Saturday trips. Closer analysis shows that an average growth of around 10% has occurred at the outer stations, but this has been offset in the totals by riders switching to the subway at the inner stations.



It is doubtful whether any significance can be attached to the pattern established by Sunday riders. The discretionary component of Sunday trips is very high, and the lack of commitment and infrequent use of the service by such trip takers can cause random variations in Sunday riding without any particular explanation.

FIGURE 11 : Sunday riding Analysis of periods before and after the opening of the subway extensions showed a significant loss of patronage at the inner stations. However, growth at the other stations was sufficient to compensate for this loss, and patronage during July, August and September, 1968 was similar to that a year earlier, when the weekend service had just commenced.

Sunday riding appeared to be boosted in October and November, both in 1967 and 1968. The reason for this is not certain, especially as this boost was not maintained during December, when one might have expected an increase in social trips.

3.4 Origins & destinations

With the exception of a few peak trains, GO Transit trains run through Union Station, allowing direct connection to be made between suburban communities east and west of Toronto. Very few people, however, make use of this facility. Less than 2% of weekday riders travel between corridors. On average, around 95% of all weekday trips either start or finish at Toronto Union, demonstrating that most GO Transit riders are strongly oriented to the Central Business District. (The remaining 3% travel within the eastern or western corridor).

At weekends, a higher proportion of riders travel between suburban stations -- typically 10% on Saturdays and 20% on Sundays -- reflecting the emphasis placed on inter-suburban trips for social and recreational purposes.

There is potential for developing traffic to suburban stations, as employment opportunities exist and are growing rapidly in some of the localities served by GO Transit. The main deterrent to suburban-oriented commuters at present is lack of suitable transportation from the station to the work place.

As we have seen, most weekday trips are taken by people who live in the suburban lakeshore communities, and who work, shop, or entertain themselves in the downtown area. To get to their nearest GO station, people either drive their cars and park them, walk, or get someone else to drop them off. Driving and parking is the most popular mode of access, as the table below shows, and the provision of free parking lots at most of the GO Transit stations has been an important factor in attracting patronage.

How people travelled from their homes to their nearest GO station.....

43%	<i>drove their car and parked there</i>
23%	<i>were dropped off</i>
22%	<i>walked</i>
5%	<i>rode with others who parked there</i>
4%	<i>used T.T.C. service (at inner stations only)</i>

(From the November 1, 1967 On-train Survey)

To get to their downtown destination from Union Station, 60% walked, and the remainder took the subway.

Figure 12 shows the relative importance of each suburban station as a trip generator, and compares the percentage change from December, 1967 to December, 1968.

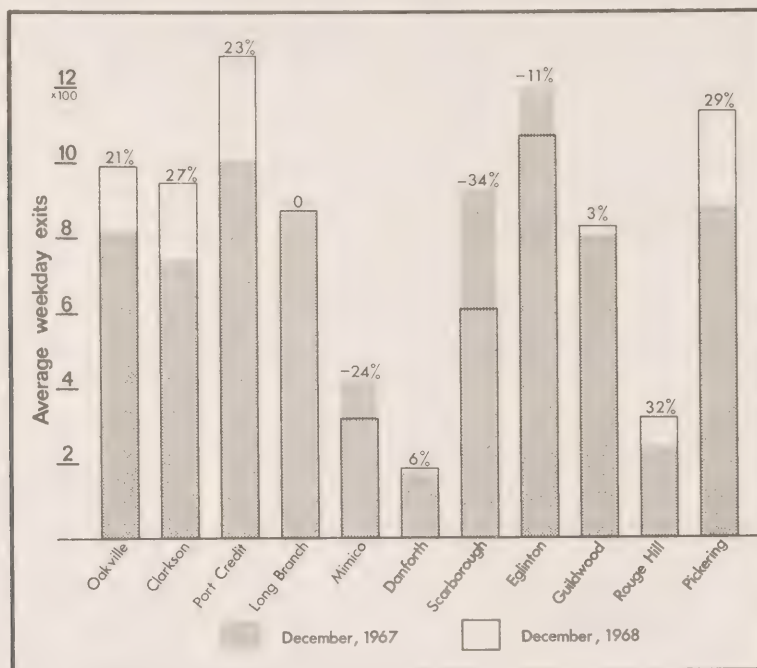


FIGURE 12 : Weekday exits at suburban stations

Most of the outer suburban stations have experienced significant growth. This is partly due to residential development and also due to people relocating to communities served by GO Transit. These points are discussed further in part 4.

The inner stations have been affected by the extensions of the Bloor-Danforth subway, and significant decreases occurred at Mimico, Scarborough and Eglinton.

West of Oakville, the stations of Bronte, Burlington and Hamilton are served by two trains in each peak period. Typical recent weekday exiting figures for these stations are:

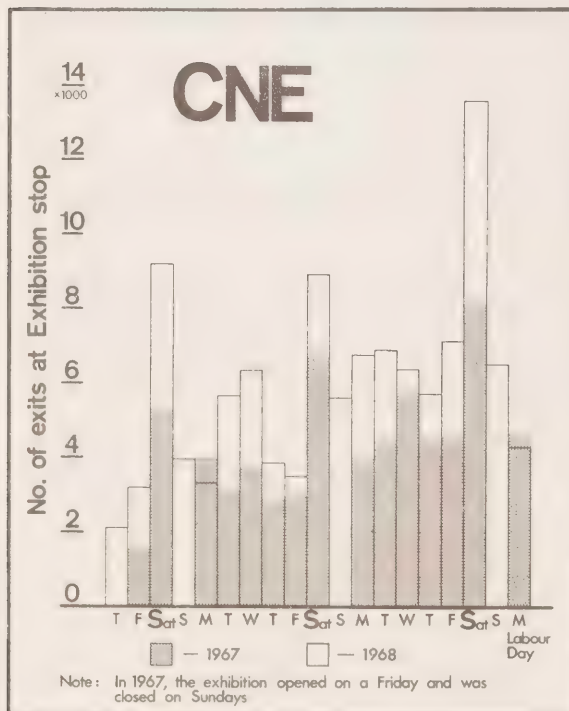
Bronte:	30
Burlington:	60
Hamilton:	35

Through 1968, Hamilton displayed negligible growth, while Burlington and Bronte both increased by around 20%. A significant number of Bronte and Burlington residents drive to Oakville station in order to utilize the full GO Transit service.

For the whole GO Transit system average weekday riding in December, 1968 was 4% higher than during December, 1967.

3.5 Special events

At certain times in the year, special events occur which substantially boost GO Transit riding above the normal level. The most important of such events is the annual Canadian National Exhibition (C.N.E.). In 1967 and 1968, GO Transit operated special services to the old Dufferin Street stop near the west end of the Exhibition Park.



In 1967, the exhibition took place over a 15 day period from Friday, August 18 to Monday, September 4 excluding Sundays, when the grounds were closed. 14 trains per day carried around 66,000 people to the exhibition over this period, making a total of 130,100 trips. (Most of them used GO Transit to get both to and from the exhibition, making two trips). Around 30% of these riders were children.

In total, GO Transit carried 2.2% of the 3,017,000 people who visited the C.N.E.

FIGURE 13 : Exits at Exhibition station during the C.N.E.

In 1968, the exhibition took place over a 19 day period, commencing on Thursday, August 15, and remaining open, including Sundays, until Monday, September 2. GO Transit offered a much improved level of service over the previous year, with 32 trains stopping on weekdays, 26 on Sundays, and 57 trains maintaining half-hourly headways on Saturdays and Labour Day. As a result, the total number of trips increased 75% to 227,400, and GO Transit's share of the total trip market increased from 2.2% to 3.5%.

While the GO Trains were handling the many thousands of riders who used the old Dufferin Street stop during the 1968 C.N.E., work was proceeding on the construction of a new station situated just north of the Coliseum building. The new station, called Exhibition, was completed during November and since then special service has been provided to all the major events which have taken place in the grounds.



The old Dufferin Street stop (left) and the new Exhibition station under construction

The first event served by the new station was a C.F.L. football game at the nearby C.N.E. stadium on November 9. The carryings on that day and during subsequent events to which GO Transit provided service are listed below:

<u>Date</u>	<u>Event</u>	<u>Total trips</u>
Nov.9	C.F.L. Football	2,800
Nov	Football Playoff	8,400
Nov.15 to 23	Royal Winter Fair	10,800
Nov.30	Grey Cup	5,400
Nov.24 to Dec.23	Christmas Fairyland	12,000
<u>TOTAL</u>		<u>39,400</u>

Certain other annual events occur which boost GO Transit riding above the ordinary. The Santa Claus Parade, which takes place on the third Saturday in November, attracts a large number of people to the downtown area, and carryings on the GO trains have been substantially higher than usual. Total carryings on the day of the parade were 11,600 in 1967 and 10,800 in 1968, the decrease being probably due to the subway extensions.

The schools' winter holiday week, which usually takes place the third week of March, boosted riding by around 3000 trips per day in 1968.

3.6 Children on GO Transit

Children under 4 ft. 8 ins. -- corresponding to an age of around 12 years -- can ride between any two stations on the GO Transit

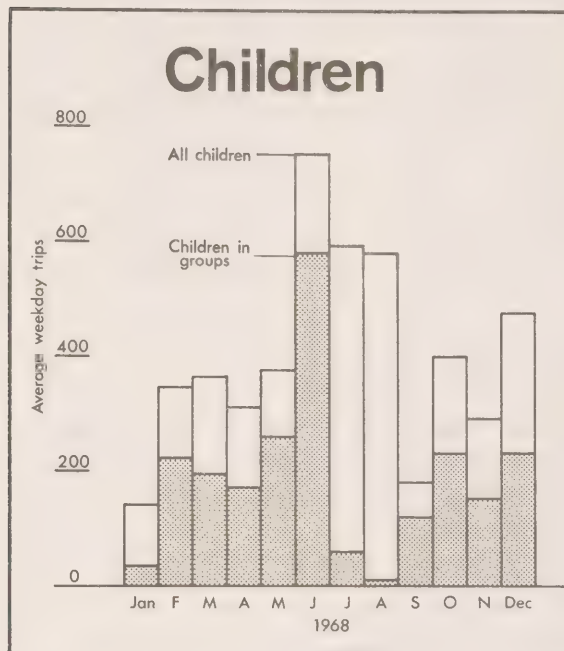


FIGURE 14 : *Children riders*

system for a fixed fare of 25¢. As figure 14 shows, the number of children who use the service during weekdays varies appreciably by time of year. (The chart excludes special events at Exhibition Park and the March school holiday week). During school time, the majority of children travel in large parties, suggesting organized school trips. These trips reach a peak in June. In the summer vacation months, the number of kids who travel in large parties drops to a very low level, but many trips are taken by children travelling with their parents or in small groups.

During the 1968 Canadian National Exhibition, the number of children's trips soared to between 4,000 and 5,000 per weekday. Altogether, over 60,000 trips were taken to and from the Exhibition by children during its 19 day period.

Excluding special events, children accounted for an average of 400 trips per weekday during 1968, or 2 1/2% of all weekday trips. At weekends, children are out of school and their parents are often free to travel with them. It is, therefore, not surprising that the proportion of children riding GO trains on Saturdays and Sundays is much higher than during the week. In 1968, children's trips averaged 450 on Saturdays and 280 on Sundays and accounted for 8 1/2% and 10 1/2% of all trips respectively.

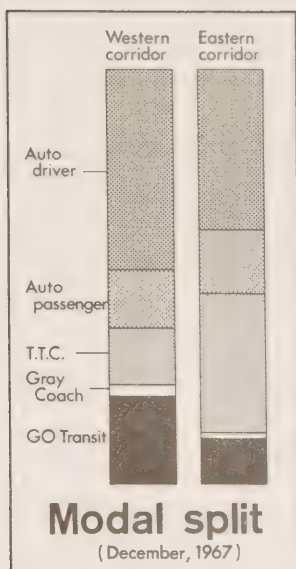
4 Impact

4.1 Introduction

Previous sections have examined the characteristics of the GO Transit system in isolation. This section looks at the service in relation to the communities it serves, and attempts to assess the impact that it has had on aspects such as other modes of transportation, and economic development.

4.2 Choice of mode

Before the introduction of GO Transit, there was a limited rail service between Hamilton and Toronto consisting of two trains in each peak period. Around 5% of all trips made between the western lakeshore communities and central Toronto were by rail. In the east, there was virtually no commuter rail service and use of the mode for trips to central Toronto was negligible.



After GO Transit had been in operation for a few months, a significant number of trip takers both east and west of Toronto had switched to rail. The inset shows the modal split of all trips taken to central Toronto from the communities served by GO Transit (from a household survey conducted in late 1967, several months after the start of the GO service).

The same survey revealed that GO Transit's market penetration tended to increase as the distance from central Toronto increased. Figure 15 demonstrates this feature.

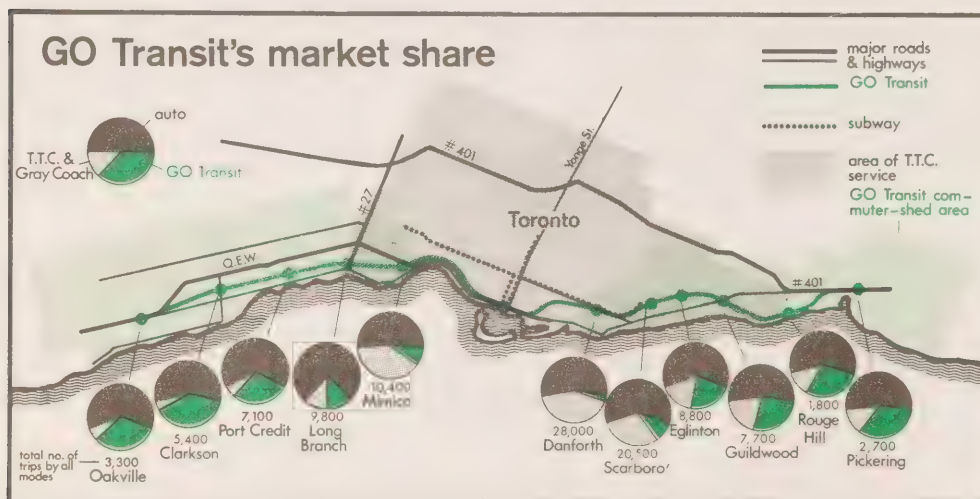


FIGURE 15 : Modal choice by catchment area

The modal choice of trip takers in the eastern communities reflects the availability of T.T.C. service to many of the areas served by GO Transit. In the west, there is a higher percentage of automobile trips due to the existence of superior highway facilities.

In the outer communities such as Clarkson and Pickering, GO Transit has managed to attract over 35% of all trips to central Toronto. (It should be noted that the modal split charts are

based on conditions prior to the extension of the Bloor/Danforth subway. GO Transit's market share will have decreased since then at Scarborough, Eglinton, Mimico and Long Branch stations).

If one considers the locations of the origins and destinations of trip takers with regard to GO Transit station sites, then one

Variation of GO Transit market share with convenience of access to stations

		Distance from Union Station			
		SHORT WALK	TRANSIT RIDE		
			short	medium	long
Distance from suburban station	SHORT WALK	66%	34%	20%	18%
	short	47%	19%	8%	6%
	AUTO RIDE				
	medium	19%	11%	4%	3%

can conclude that certain groups of people are particularly susceptible to using commuter rail. Surveys have shown that, for the whole system, two thirds of all people who live within walking distance from a suburban GO station and who work within a short walk from Union Station actually make use of GO Transit for their trip. Thus residential

development taking place near stations is likely to yield a high proportion of GO users. As the inset shows, the GO Transit market share decreases as the accessibility of home and/or work to the relevant GO station decreases.

Participants in the fall, 1967 household survey who did not use GO Transit for their trips were asked why not. By far the most important single reason was inconvenient accessibility to stations (40% response), followed by "cost too high" (17%), "need car for work" (14%), "train takes too long" (12%) and "prefer car" (9%).

In summary, then, among the trip-takers who are free to choose their mode of transportation, the major factors determining whether or not they use GO Transit would appear to be:

- 1) Convenience of access of trip origin and destination to GO Transit stations.
- 2) Availability and characteristics (cost, frequency, convenience, speed) of alternative transportation.
- 3) Attitudes to various transportation modes, i. e., some people just "prefer" cars, or dislike public transportation.

4.3 Impact of GO Transit on other modes of transportation

Around 8,000 people ride GO Transit on a typical weekday. Up to 1,000 of these were using rail (in the western corridor) prior to GO, leaving a significant number of people who have switched from other modes. The table below, based on the November 1967 on-train survey and, therefore, pertaining to conditions prior to the subway extensions, shows the modes used by GO Transit riders before the service was introduced. Previous rail users, and people who didn't need to make a trip prior to GO (i. e. recently located along lakeshore) have been excluded.

Previous mode	GO Transit trips* (weekday)	
	No.	%
Auto	7,250	58
T.T.C.	3,400	27
Gray Coach	1,700	13
Other	200	2
Total	12,550	100

Clearly, by far the majority of new rail users had previously driven, or had been passengers in automobiles. The practical implications of this are discussed below.

* A trip is defined as a one-way journey between origin and destination. Most GO Transit riders therefore make two trips during the day.

The Q.E.W., at the section measured, has experienced an annual growth rate of around 6% over the last few years. This suggests that GO Transit may have delayed the point at which the capacity of the highway will be reached by between one and two years.

In the east, it was estimated that the volume of westbound traffic travelling along Danforth Avenue, St. Clair Avenue East and Kingston Road just west of the intersection of these roads with Kennedy Road during the peak morning hour would have been increased by at least 750 vehicles had GO not been operating (see Figure 16). This would represent a 17% increase on the combined volumes along these roads. It was not possible to estimate the increase that would have occurred on any one of these roads, but clearly GO Transit has significantly reduced peak volumes.



An eastbound GO train approaches Toronto alongside traffic on the Gardiner Expressway.
fra

4.3.2 Impact on other public transportation

The introduction of GO Transit provided an alternative form of public transportation to many people who were using Toronto Transit Commission or Gray Coach service. Although it was not the purpose of GO Transit to directly compete with these facilities, it was inevitable that a certain number of people would find that the new commuter rail service offered advantages over their alternative mode of public transportation.

The Toronto Transit Commission operates extensive subway, streetcar and bus service throughout Metropolitan Toronto (see figure 15). The impact of the introduction of GO Transit on the T.T.C. was twofold: the T.T.C. lost some patrons due to people switching to GO as their principal mode of transportation, but gained many new trips due to people using the T.T.C. to get to and from the GO system. These gains, which mainly comprised transfers from GO to the subway at Union Station, significantly outweighed the losses and, even after the subway extensions had been completed, it was estimated that the T.T.C. had an effective net gain of around 3,400 daily trips due to the existence of GO Transit (October '68 conditions). In other words, if GO were to stop operating altogether, the T.T.C. would lose 3,400 daily trips in total.

While it seems as though the T.T.C. has actually benefited from the introduction of GO Transit, the opposite is true for Gray Coach lines. A wholly owned subsidiary of the T.T.C., Gray Coach operates inter-urban bus service to many parts of Ontario. Two of its routes, between Toronto and Hamilton, and Toronto and Oshawa, parallel much of the GO Transit route. Service on both these routes varies from hourly during off-peak periods to every fifteen minutes during peak times. GO Transit offers a significant time advantage along all these routes and, at the time of its introduction, return fares were comparable for both systems. Fare increases by Gray Coach which came into effect in late June, 1968, gave GO Transit a slight price advantage.

The chart below suggests that the introduction of GO Transit has inhibited riding on these two routes.

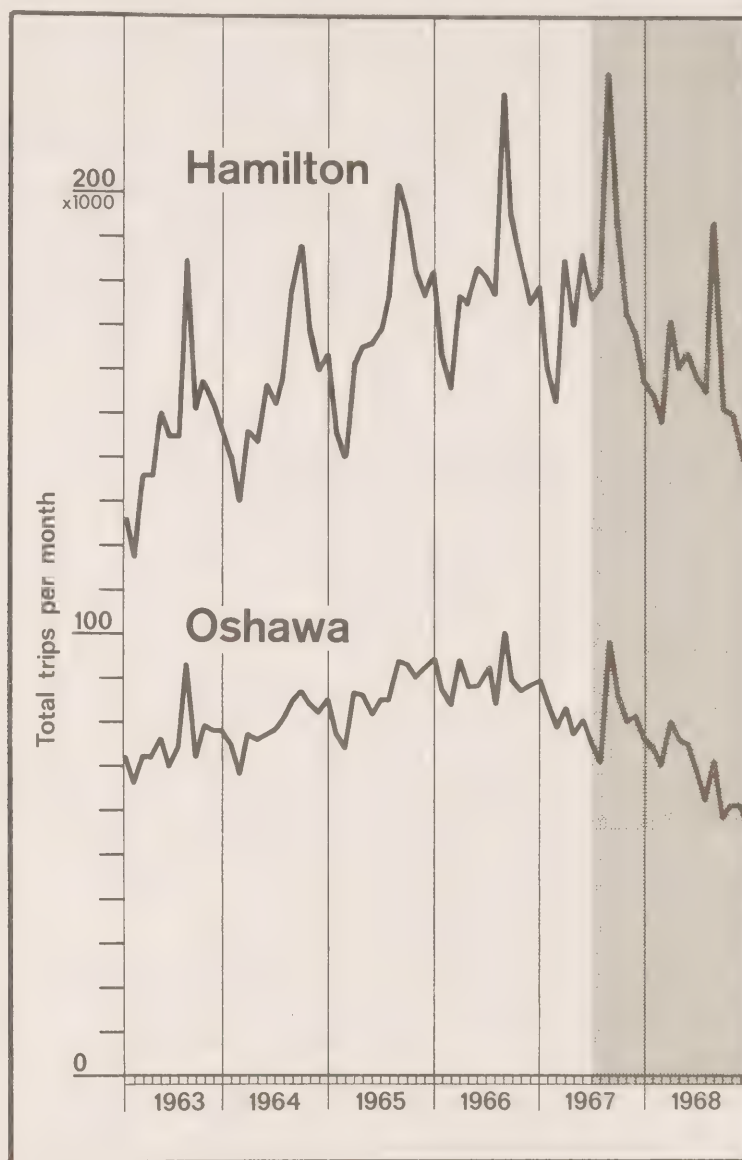


FIGURE 17 : Monthly carryings on the Gray Coach Toronto-Oshawa and Toronto-Hamilton bus routes.

4.4 Impact on people & their community

The introduction of any transportation system capable of carrying large numbers of people is bound to have an influence on the characteristics and economic development of the communities it serves. The problem is to establish a direct causal relationship between, in this case, GO Transit and developments which have taken place subsequent to its inauguration. Research is presently being undertaken by the University of Waterloo to determine the impact of GO Transit on land use, cost of land and other related topics. Pending the completion of this comprehensive study, the sections below present some interim findings.

4.4.1 GO creates its own submarket

The initial patronage of GO Transit was drawn from people who had previously used other modes of transportation (with the exception of the 1,000 or so western corridor trip takers who had used the limited C.N.R. peak rail service). However, in addition to securing a share of this existing travel market, it is evident that GO Transit has also created a new trip market. Its very presence has been instrumental in attracting some people to locate within the communities it serves in order to make use of the service. These people might not otherwise have located in these areas.

As evidence of this, a survey conducted among GO Transit riders approximately 6 months after the inauguration of the service revealed that GO Transit had influenced the choice of location of 65% of the riders who had occupied their current homes for two years or less, i. e., these people had relocated since the announcement of the GO Transit project. Among those who had relocated within the six months prior to the survey, more than two thirds indicated that their choice of location was influenced by GO Transit. It is not surprising then that GO Transit users tended to have occupied their present addresses a significantly shorter period than the total community.

Length of occupation of present address	GO Transit riders*	All house- holds in GO catchments†
Up to 6 months	18%	3%
Between 6 months & 1 year	7%	5%
Between 1 year & 3 years	16%	22%
Over 3 years	59%	70%

* On-train Survey, November, 1967

† Fall Household Survey, November & December, 1967
& January, 1968

The influence on location exerted by GO Transit was more marked in the newer residential areas further out from Toronto: Guildwood, Rouge Hill and Pickering (Bay Ridges) in the east, and Port Credit, Clarkson and Oakville in the west. The influx of these new rail oriented residents has provided a spur to residential development in these areas.

4.4.2 Residential development

There is evidence that significant residential development has taken place in the vicinity of many GO stations. How much of the development can be directly attributed to GO Transit will be determined by the research project which is presently underway. Meanwhile, it is of interest to cite some examples, without claiming any proven causal relationship with the commuter rail service.

The most striking example of recent residential development has occurred in Port Credit. Since the GO Transit service was introduced, 600 apartment units have been completed, and a further 800 are planned or under construction. All these apartment buildings are within easy walking distance from the GO station.

At Clarkson, extensive low density housing development is taking place within convenient access to the station, while at Oakville, comprehensive redevelopment plans have been proposed by the Oakville Planning Board for the area surrounding the GO station. These plans make frequent reference to the commuter rail facility.

Even without definitive proof, it seems reasonable to conclude that the introduction of GO Transit has been a factor in attracting new residents to the communities it serves, and this influx has encouraged residential developments in areas where they may not have otherwise taken place.



High-rise development near GO stations.



Eglinton

Port Credit



5

Restraints & attractions

5.1 Internal factors

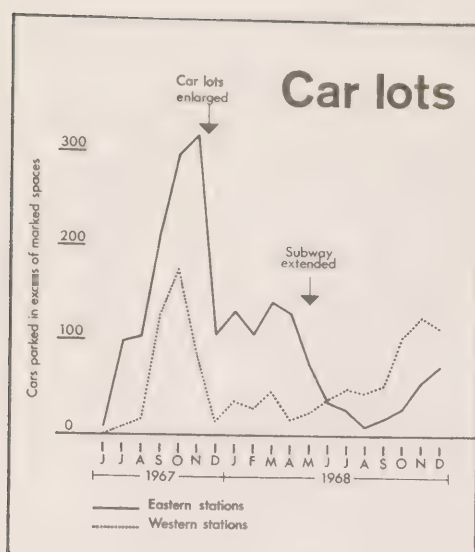
Certain factors pertaining to the GO Transit system itself, and, therefore, theoretically controllable, have tended to restrict the use of the service. Probably the most significant restraint arose as a result of insufficient capacity at some of the suburban station parking lots.

5.1.1 Car lots

From the very start of the service, free parking lots were provided at Pickering, Rouge Hill, Guildwood, Eglinton, Scarborough, Long Branch, Port Credit, Clarkson and Oakville stations.



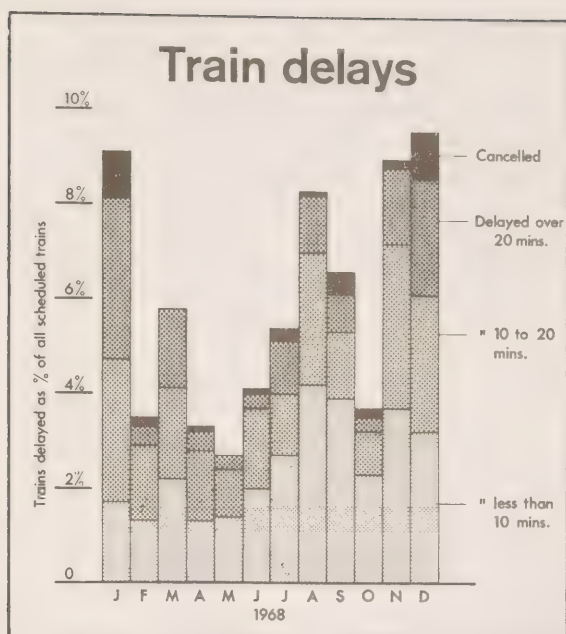
Aerial view of Port Credit station (top left) and parking lot. Building in middle left is the old C.N. station.



These lots offered a total of 1,750 parking spaces for GO Transit patrons. It soon became apparent that much of the rapid acceptance of the commuter rail service was attributable to these free parking facilities. The November 1, 1967 on-train survey revealed that over 40% of riders parked their cars at the stations and, by this time, several of the lots were full to capacity and many patrons had to park on nearby streets or plots of waste land.

An extensive program of enlarging the most utilized lots was completed during late November and early December, 1967 and by the end of the year, 2900 spaces were available.

Even these extensions proved insufficient to cope with demands during the winter of 1968. Crowding at the inner stations was eased in May, when many former GO patrons switched to the extended subway system, but several of the outer stations remain unable to cope with the demand for parking facilities. The inability of these lots to provide parking for all those who wish to use the service is clearly a restraining factor on future growth and plans for further extensions are in an advanced stage.



The inset shows that the number of trains delayed varied appreciably by month. Delays occurred in January and March during periods of snow and ice. During August, the extra stops made at the Exhibition station by many of the trains caused delays, many of which were under 10 minutes. Delays during September, November and December were caused by operational problems with some of the GO Transit equipment. Also, a snow storm towards the end of

December contributed to the high proportion of delayed trains.

While riders are inclined to excuse delays which occur due to bad weather -- much worse delays would probably be experienced on other modes of transportation -- they are not so willing to suffer those caused by equipment breakdowns. GO Transit was unfortunate in experiencing a number of technical problems with its equipment and the delays thus caused may have discouraged some trip-takers from using the service.

5.2 External factors

Apart from special events such as the Canadian National Exhibition, (which has been described elsewhere), the two external factors which have most affected GO Transit patronage have been the weather (spasmodic effect) and the T.T.C. subway extensions (constant effect).

5.2.1 The weather

During the winter months of 1968, carryings on GO Transit fluctuated appreciably from day to day. Figure 18 shows exits for each weekday during the winter quarter, and also records some of the more extreme weather conditions that were experienced.

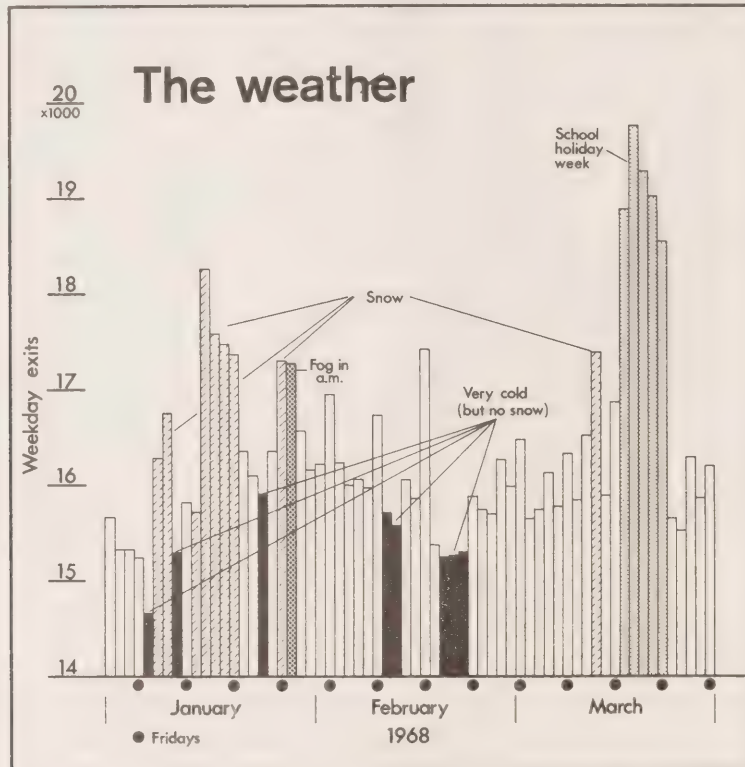


FIGURE 18 : The influence of the weather on GO Transit riding during winter, 1968

Fridays are identified by large dots, as this day has emerged as being the day of heaviest patronage during the working week, and hence peaks occurring on Fridays may be due to this, rather than to an external factor such as the weather.

From observing the relationship between the weather and rail carryings, the following general conclusions can be drawn:

Conditions that adversely affect other modes of transportation, such as snow, ice and fog, tend to boost GO Transit carryings.

These boosts are usually short-term and patronage falls again when conditions return to normal.

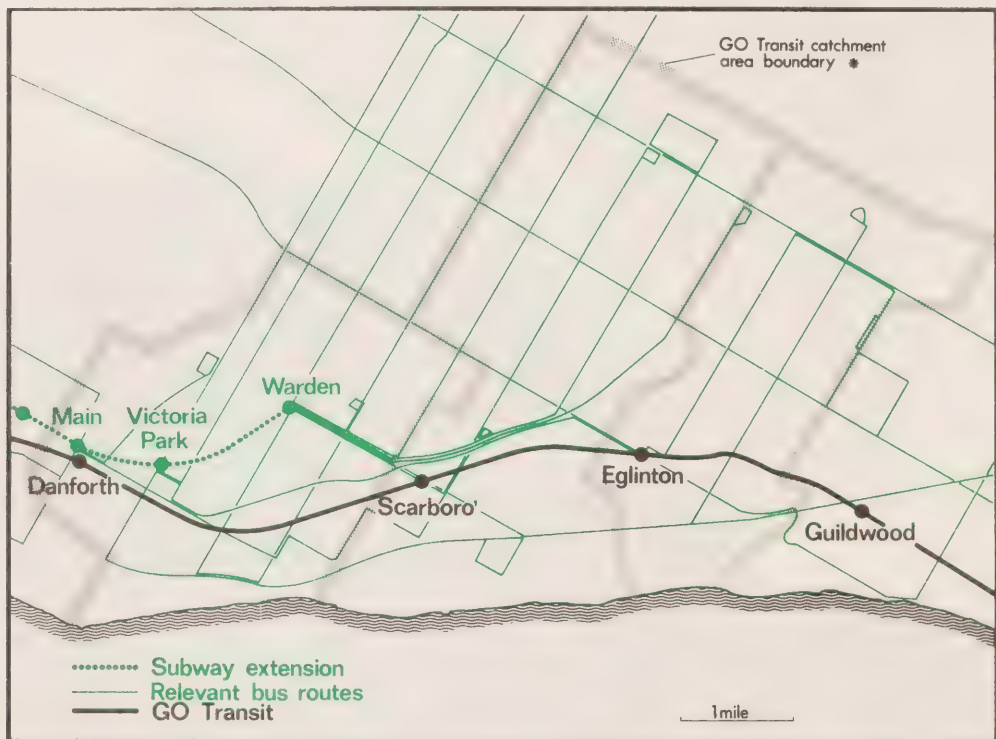
The timing of the commencement of snow fall affects the impact that it has on rail carryings. For instance, if conditions are bad early in the morning, the car driver may decide to switch to rail for his trip. However, if the severity of conditions does not become apparent until later in the day, the car driver is already committed to driving home, and only extremes are likely to cause him to abandon his vehicle and take to rail.

Cold weather without other factors such as snow tends to reduce rail riding. This is probably caused by some car drivers who decide to drive all the way to work, rather than leave the warmth of their cars to transfer at a GO station.



5.2.2 T.T.C. subway extensions

The extensions to the T.T.C. Bloor-Danforth subway line were opened on Saturday, May 11, 1968. These extensions -- which added roughly three miles of track to each end of the existing line, and involved the construction of nine new stations -- made rapid transit available to many people residing in the inner GO Transit catchment areas. The maps below show the interaction of T.T.C. and GO Transit in these areas.

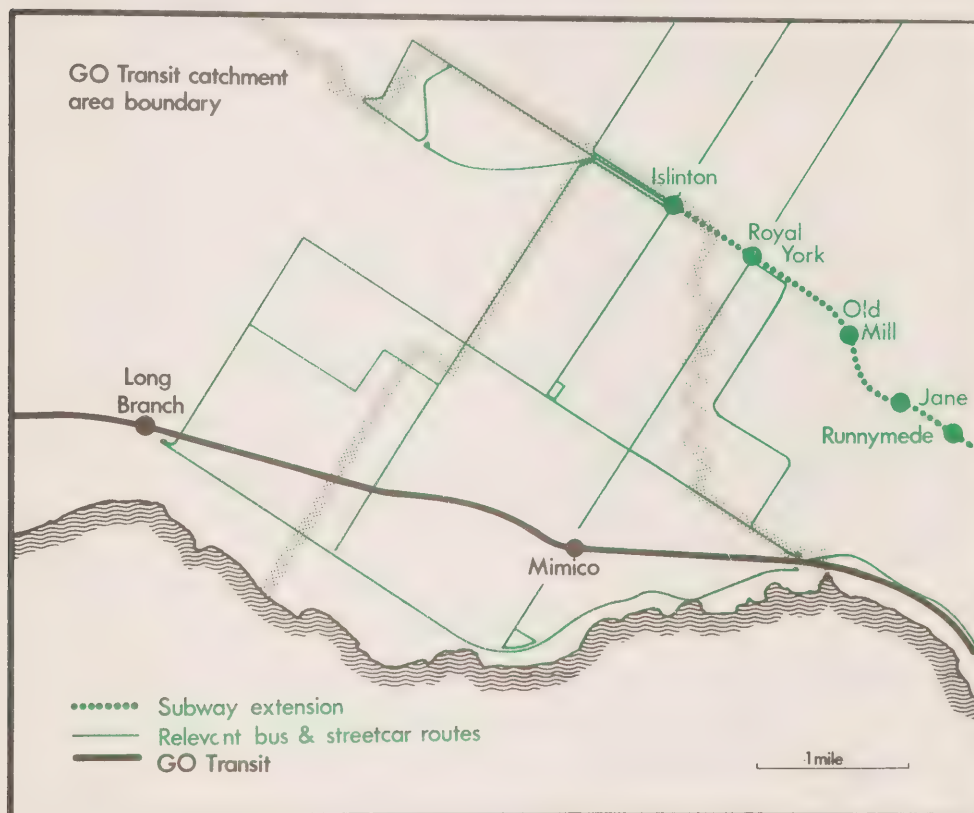


MAP 1 : T.T.C. and GO Transit facilities within the inner eastern lakeshore communities.

The T.T.C. bus and subway service extends extensively into the areas around the Scarborough and Eglinton stations. Car lots are provided at the Warden and Victoria Park stations at a cost of 50¢ a day.

* The GO Transit catchment boundary contains the areas within which the majority of GO riders reside.

The new subway stations on the western extension are geographically further away from the GO Transit line than is the case in the east. The Mimico area is served by buses which feed the Islington and Royal York stations, but the service is not as comprehensive as that provided in the Scarborough area.



MAP 2 : T.T.C. and GO Transit facilities within the inner western lakeshore communities.

Long Branch and its surrounding area is really outside convenient direct access to the subway. It is unlikely that many of the people who live within reasonable access to the GO station would find it advantageous to switch to the T.T.C. However, people living further to the north might be attracted to the subway.

With regard to cost, a return trip on the subway costs 50¢, with an additional 50¢ required if the rider parks at one of the station lots, or an additional 30¢ if he uses T.T.C. bus or streetcar to get to the subway. A return GO Transit trip between Union Station and any of the inner stations considered

costs 84¢* (multiple ride ticket rate), with an additional 50¢ if it is necessary to transfer to the subway downtown. Parking at GO stations is free.

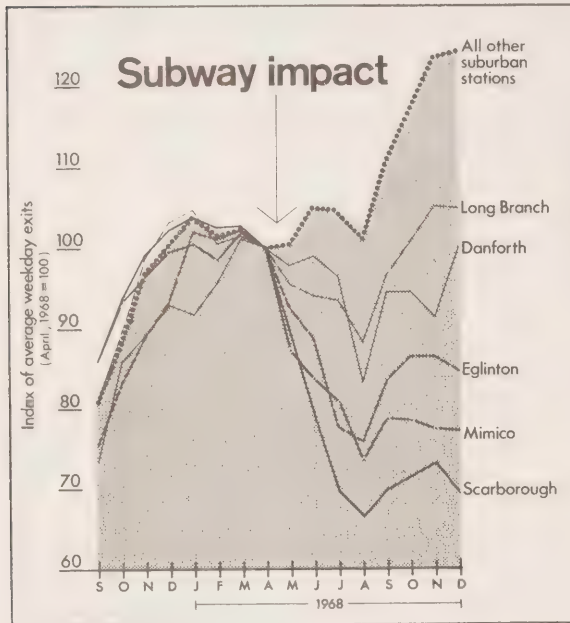


FIGURE 19 : Impact of the subway extensions on GO patronage

does not appear to have happened. The table below summarizes the estimated reduction that has occurred at the four most affected GO stations as a result of the extensions (based on weekday carryings).

	Scarborough	Mimico	Eglington	Long Branch
Distance (by road) from subway station	1.5m	2.3m	4m	5.5m
Degree of T.T.C. subway feeder bus service within station catchment	Extensive	Fair	Fair	Poor
Estimated % decrease as result of subway extension	37%	35%	30%	15%

Clearly, the existence of a parallel rapid transit system will significantly inhibit riding on a GO Transit type of service, even if the two facilities are several miles apart. This factor must be taken into account in future transportation planning in order to optimize the utilization of individual public transportation systems.

* \$1.00 from July 1, 1969.

6

Financial results

When the Ontario Government accepted the GO Transit project in 1965, it was fully aware that the operation of the service would incur an estimated deficit of some \$2 million a year. During the year ending December 31, 1968, the actual net operating deficit was \$2,599,000. The table below summarizes the major costs and revenues relating to this 12 month period.

	\$
Train operations	3,203,000
Station expenses	1,059,000
Maintenance of way	592,000
Overheads	368,000
<hr/>	
GROSS OPERATING COST	\$5,222,000
LESS NET REVENUE	\$2,623,000
<hr/>	
NET OPERATING DEFICIT	\$2,599,000

A total of 4,669,000 trips were taken on GO Transit during 1968.
On a per-trip basis, we have

Gross operating cost per trip :	\$1.12
Net revenue per trip :	.56
<hr/>	
Net operating deficit per trip :	.56

The average rider, therefore, paid half of the actual costs incurred in transporting him.

The capital cost to the government of implementing the lakeshore service into operation is summarized below:

GO Transit share of track and signal construction	8,000,000
Locomotives, self-propelled cars and coaches*	11,500,000
Station and parking lot con- struction	4,600,000
<hr/>	
TOTAL CAPITAL COST	24,100,000

* Includes 14 additional coaches brought into service during October and November, 1968.

7

The future

7.1 Expansion of Lakeshore service

As previous sections have shown, GO Transit has been enthusiastically received by residents of the lakeshore communities. This immediate public acceptance has stimulated demands for the early expansion of GO Transit to other areas, and has led the government to make an assessment of the present system and of the possibilities for future expansion.

The initial consideration was the extension of the lakeshore service. It was estimated that track and signal construction costing approximately \$12 million would be needed in order to extend full service between Pickering, the present eastern terminus, and Oshawa. A further investment of some \$2 million would be required for the construction of station facilities and additional trains.

In the west, C.N.R. estimated that a capital expenditure of around \$30 million would be required for tracks, bridges and signals between Burlington and Hamilton in order for full service to be introduced west of Oakville. Additional expenditure on rolling stock and station facilities would be required, and operating costs would be increased significantly.

An alternative to extension of the rail system which would not require large capital investment could be provided by a shuttle bus service between Oakville and Hamilton, and Pickering and Oshawa. The feasibility of operating such a system is presently being examined.

7.2 Expansion along other rail lines

The Metropolitan Toronto and Region Transportation Study, in an initial study into the feasibility of establishing a commuter rail operation, examined the rail lines that existed in the Toronto region, and their suitability for various levels of transit service. This study has been up-dated with the assistance of the railway companies and the cost of introducing lakeshore-type commuter service along the feasible alternative lines has been estimated. The potential patronage on each of these lines has been assessed using data derived from experience with the lakeshore line. Figure 20 shows the relevant cost and patronage estimates for the lines considered. (Costs are not shown for the Stouffville and Malvern lines as it was considered that full service would not be justified by the low projected patronage). The Newmarket via Richmond Hill line considers the possibility of linking the C.N. Newmarket and Bala subdivisions by constructing approximately 5 miles of new track.

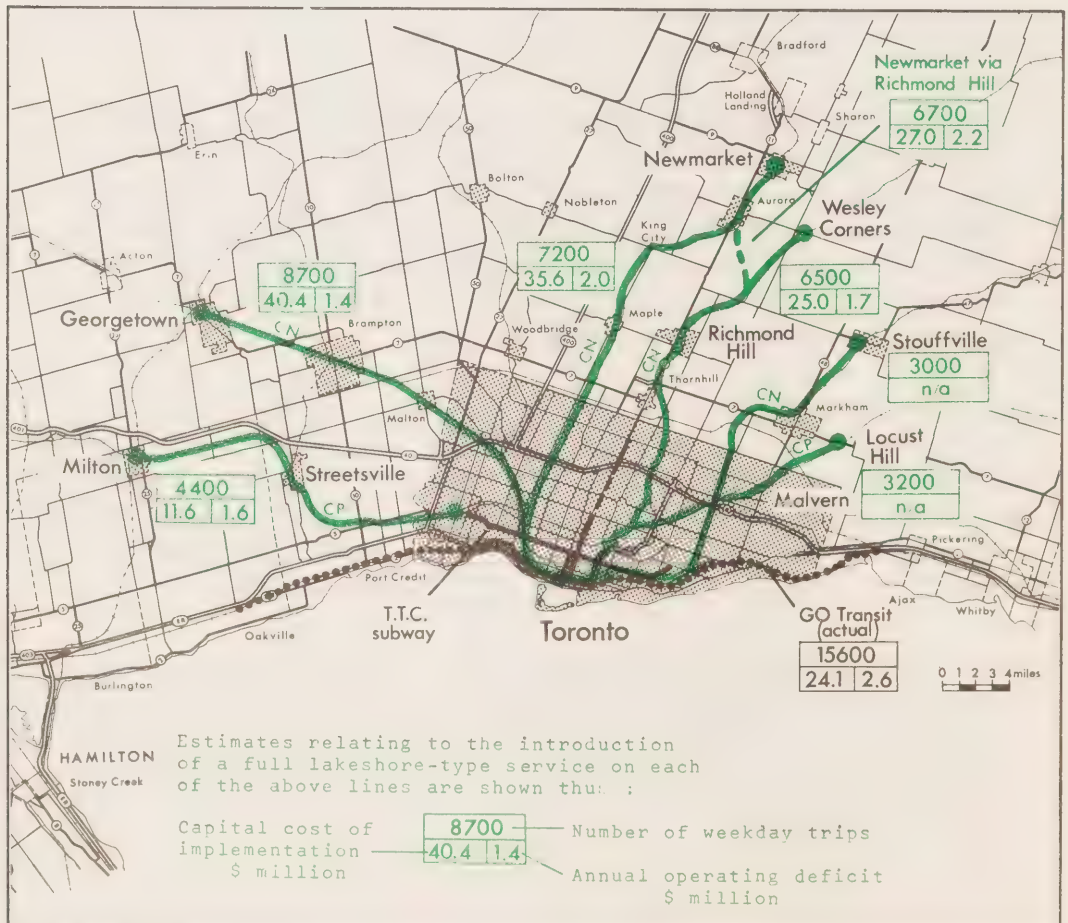


FIGURE 20 : Estimated costs and patronage for extending commuter rail service along existing rail lines.

Also considered was the possibility of introducing a limited service of three trains in each peak period, if these could be accommodated without substantial capital expenditure. A summary of the estimated costs and patronage is shown below:

	Capital cost	Annual operating deficit	Weekday trips
Newmarket via Richmond Hill	\$9.0m	\$210,000	2,800
Richmond Hill Streetsville	\$7.4m	\$130,000	2,750
Streetsville Stouffville	\$5.3m	\$170,000	1,900
Stouffville	\$4.2m	\$340,000	1,250

It should be noted that C.N.R. did not consider that even a limited service could be introduced on the Georgetown and Newmarket lines without substantial expenditure on right-of-way.

7.3 Planning for the future

The previous section has revealed the high cost of implementing commuter rail service along existing rail lines. Also, experience has shown that the use of existing railway company owned rights-of-way has certain disadvantages. The government would be required to invest a large amount of capital in improving right-of-way which would continue to be wholly owned by the railway company. All decisions regarding scheduling of trains would have to be approved by the railways and fit in with their other traffic. Also, opportunities for subsequent increase in the level of service might be restricted or might necessitate substantial additional government investment.

The Ontario Government, while accepting the need for a balanced transportation system, and while each of the suggested routes of expansion of commuter rail service remain under consideration as possible solutions, cannot accept a program

of such extremely high initial and continuing cost without first examining alternative routes and modes. An intensive study is presently being carried out to consider these alternatives.

Possibilities presently being examined range from conventional modes such as express bus to experimental systems such as tracked hovercraft vehicles. Attention is being given to the possible use of highway right-of-way for mass public transportation systems, and to the development of a service corridor, incorporating hydro, sewers, communications, road, and transit facilities.

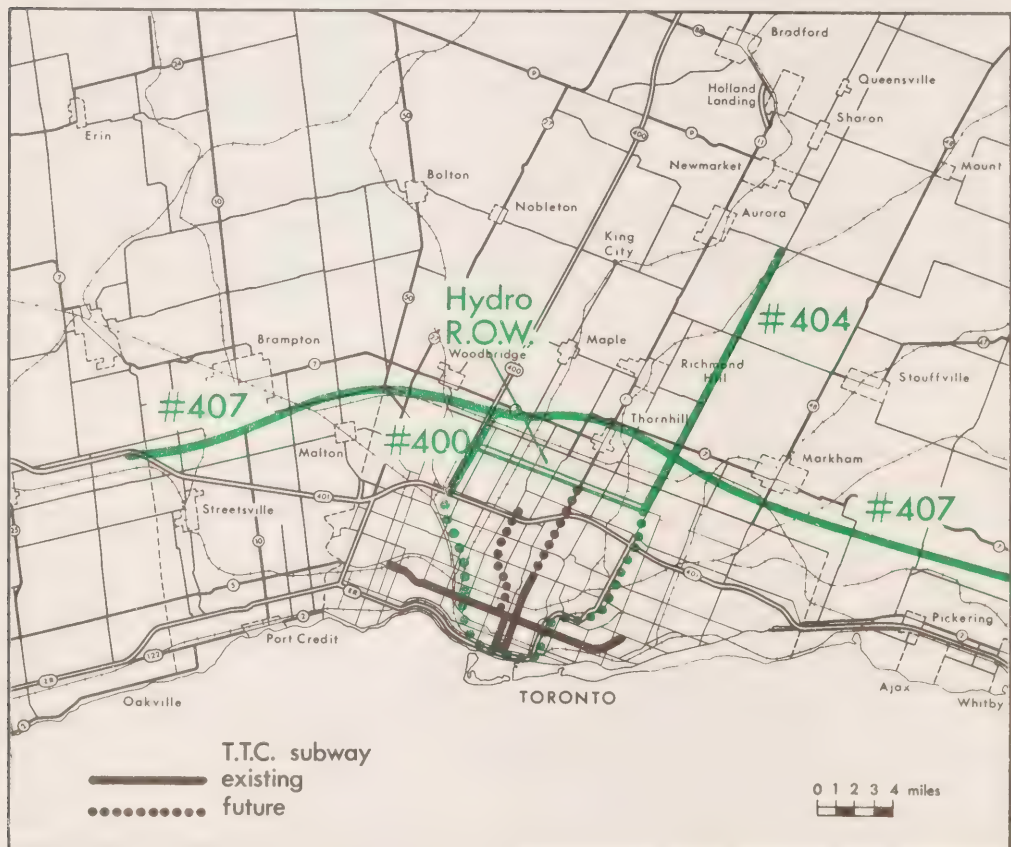


FIGURE 21 : The possible utilization of hydro and future highway rights-of-way for transit facilities

The map above illustrates the possible use that could be made of highway rights-of-way. Future highways 407 and 404 (Don Valley Parkway extension) could incorporate facilities for transit operations, and any enlargement of existing Highway 400 would provide part of a third route. There is in existence a Hydro right-of-way just north of Finch Avenue which could be used in

conjunction with one, or a combination of the above highway routes to link the transit system with the planned T.T.C. Yonge Street subway extension. Ultimately, the system could be routed direct to the downtown area via a Highway 400 extension and /or through the Don Valley.

Such a system could initially comprise express buses operating along exclusive paved bus ways. At a later date, a more sophisticated high density system could utilize these rights-of-way.

To conclude this report, and to set the scene for future provincial government participation in transportation planning, it is appropriate to quote the Prime Minister of Ontario, the Honourable John P. Robarts, in his statement to the Legislature, May 8, 1969, with regard to expansion of GO Transit:

"The Government of Ontario recognizes the need for an integrated, total approach to the emerging problems of transportation in our heavily-populated urban centres. I use the word emerging because transportation experts agree that in our early recognition we have the capability of dealing with them before they grow to overwhelm our expanding communities. We can take advantage of the lessons of the experiences of the great cities of the world. We are prepared to take the bold approach to find the right answers while we still have time on our side. We have done this in the GO Transit experiment. But experience with this service has not satisfied us that this is any more than one element in the ultimate solution.

"The high level of investment required for mass transportation systems of any kind necessitate that the fullest investigation be carried out to prove their economy and effectiveness. The money that we are prepared to make available in our search for acceptable solutions will, I am confident, be a wise investment that will ensure greater value for our transportation dollar.

"The approach we have adopted in Ontario is a logical approach to bring about orderly development of the province and, in particular, our highly-populated areas."

